DOCUMENT RESUME

ED 273 499 SE 047 211

AUTHOR	Bumstead, Cynthia, Ed.; And Others
TITLE	Pesticides: A Community Action Guide.
INSTITUTION	Concern, Inc., Washington, DC.
SPONS AGENCY	Mott (C.S.) Foundation, Flint, Mich.
PUB DATE	May 85
NOTE	28p.
AVAILABLE FROM	Concern, Inc., 1794 Columbia Road, NW, Washington, DC 20009 ($3.00).
PUB TYPE	Guides - General (050)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Activism; Agricultural Production; *Citizen Participation; *Community Action; Environmental Education; *Environmental Standards; Hazardous Materials; *Land Use; Legislation; *Pesticides; Pollution; *Public Health
IDENTIFIERS	*Environmental Action

ABSTRACT

Developed to provide an introduction to the issues surrounding the use of chemical pesticides, this booklet encourages individuals and communities to become active in determining the safe use and regulation of pesticides. The major components of the guide include: (1) an explanation of the issue; (2) pesticides and their effect on human health; (3) pesticide use in agriculture; (4) pesticides and forests; (5) pesticides in cities and towns; (6) federal legislation; (7) state legislation; (8) examples of community action projects; (9) guidelines for community action; and (10) resource lists and a bibliography. This booklet is another in the series of community action guides developed by Concern, Inc., a nonprofit organization that provides environmental information to individuals and groups, and encourages them to act in their communities. (TW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Concern, Inc.

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED273499

Pesticides

a community action guide

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY
Beverly Carter
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

SE 040 411

On the cover:
The lacewing is a beneficial insect which helps to control pests. Of the countless insect species, only about 1% are pests. Most insects are harmless, and many are beneficial. They are often destroyed, along with target pests, when chemical pesticides are used.

The drawings of the ladybug, ground beetle, bumblebee, and the praying mantis in the booklet are examples of other beneficial insects.

Copies of *Pesticides* are available for $3.00 each, postpaid.
For information about bulk orders, contact:

CONCERN, Inc.
1794 Columbia Road, NW
Washington, DC 20009
(202) 328-8160

Pesticides

a community action guide

This publication is made possible by a grant from the Charles Stewart Mott Foundation. The interpretations and conclusions contained in this publication represent the views of the grantee and not necessarily those of the Mott Foundation, its trustees, or officers.

May 1985

About This Booklet

The purpose of this booklet is to provide an introduction to the complex issues surrounding chemical pesticides and to encourage individuals and communities to take part in determining safe use and more effective regulation of pesticides. Community action is particularly important now that regulatory agencies are receiving little support and funding.

The information in *Pesticides* is based on published materials as well as conversations with individuals from government agencies, universities, and environmental and community organizations. We would particularly like to acknowledge the assistance of the National Coalition Against the Misuse of Pesticides whose National Pesticide Forum provided much of the material on community action described in this booklet.

About CONCERN

CONCERN, Inc. is a nonprofit, tax-exempt organization, founded in 1970, that provides environmental information to individuals and groups and encourages them to act in their communities. The primary activity of this organization is the publication and distribution of reports which define key environmental issues and contain suggestions for individual and group action. In many instances these reports have been the foundation for subsequent workshops, conferences, exhibits, and other educational activities. CONCERN's programs are supported by private grants and individual contributions.

CONCERN, Inc.
1794 Columbia Road, NW
Washington, DC 20009
(202) 328-8160

Editors: Cynthia Bumstead, Andy Knaus, Adelyn Jones
Graphics by CONCERN, Inc.

Contents

The Issue	2
Pesticides and Health	2
Agricultural Pesticides	4
Pesticides in Forests	8
Pesticides in Cities and Towns	10
Federal Legislation	12
State Legislation	16
Community Action	17
Action Guidelines	19
Resources	21
Select Bibliography	22

The Issue

Pesticides are used in countless ways throughout the US—on farms and forests, in ponds and lakes, in cities and towns, in hospitals, schools, offices, and homes, and in a variety of products from shampoos to shelf paper. As a result, they may be found wherever we live, work, or play, in the air we breathe, the food we eat, and the water we drink. The cumulative and synergistic effect of this widespread and repetitive exposure is only partially understood, difficult to document, and hard to control.

In the 1940s, when DDT appeared to be the miraculous solution to pest problems, little was known about the damage that this synthetic chemical compound, or others like it, could cause. Since that time the use of chemical pesticides to control insects, rodents, mites, weeds, fungi, bacteria and other pests, has increased tenfold, doubling in the last 20 years. Traces of pesticides can be found in the body fat of virtually everyone in the US; some pesticides are believed to remain toxic in the environment for 50 to 100 years. Despite these alarming implications for public health, the majority of pesticides on the market today have not been adequately tested and, at the current rate of evaluation, will not be in the near future.

However, the public has been persuaded that chemical pesticides are necessary for producing food, protecting health and eliminating nuisance pests, and that considerable risks are outweighed by benefits. What has been left out of this argument is that safe, viable alternatives have been available for many years but have been neglected because chemicals seemed so effective and their dangers were not well understood.

In the final analysis, alternatives will not be developed and used until people decide that the extent of our current dependence on chemicals is unacceptable.

Pesticides and Health

Pesticides are intended to interfere with the life processes of unwanted organisms, but they can cause biochemical changes in humans as well. Pesticides vary in their toxicity and persistence, and therefore in their impact on human health and the environment. The uses of chlorinated hydrocarbons, such as DDT, dieldrin, and chlordane, have been restricted because they were found to persist in the environment, magnify in the food chain, and remain in the body. Today, the most commonly used pesticides in the US are the organophosphates, such as malathion and parathion which are suspected carcinogens, and the carbamates, such as aldicarb. Although less hazardous environmentally, they are generally more toxic upon direct contact. Organophosphates, especially parathion, have caused more deaths from acute poisoning than any other pesticide.

Pesticides can enter the body through inhalation, ingestion, or contact with the skin. People vary widely in their susceptibility. Children and the elderly are the most vulnerable to poisoning because of their more limited body defenses, but anyone can become sensitive to chemicals from repeated or heavy exposure because of damage to the detoxifying system. The chemically-sensitive can be severely affected by even a slight exposure. Others may suffer subtle damage, unknowingly and gradually, from continuing exposure. For example, studies have shown that the organophosphates have affected brain waves long after very low-level exposures. A Federal Aviation Administration report in 1964 showed that such exposures reduced crop-dusters' performance and caused memory loss, depression, and even symptoms of schizophrenia up to a year afterwards.

Symptoms of acute poisoning may include headache, blurred vision, nausea and vomiting, pulmonary edema, changes in heart rate, muscle weakness, respiratory paralysis, mental confusion, convulsions, and coma, possibly leading to death. Many of these severe symptoms were suffered by the residents of Bhopal, India in 1984.

Long-term Health Effects

Data on the long-term consequences of pesticide exposure are difficult to obtain due to the delayed onset of a disease and uncertainties about when and how exposure may have occurred. Among the more serious of the possible long-term effects are cancer, alteration of DNA, nervous system disorders, liver and kidney damage, respiratory problems, and problems of reproduction.

Many widely-used pesticides are known or suspected carcinogens. There is mounting evidence that greater pesticide use, especially of organophosphates and carbamates, has increased the rate of death of farmers from cancers of the lung and lymph system. Studies from Wisconsin, Iowa, and Nebraska also show rates higher than the national average of leukemia among farmers. Commercial pesticide applicators show elevated risks of skin and bladder cancer.

The Environmental Protection Agency (EPA) has allowed cancer-causing chemicals to remain on the market because exposure levels have been considered safe. However, new federal guidelines for chemical carcinogens state that *any* exposure to a cancer-causing substance conveys a measurable risk of cancer.

Pesticides are among the few toxic materials deliberately added to the environment.

Marion Moses

Pesticides affect reproduction by causing alteration of genetic material (a mutation) and/or by harming the fetus. While either kind of damage can result in miscarriage, stillbirth, or birth defects, mutations can also be carried on to the next generation. Most pesticides have not been tested for either reproductive effect. A five-year study in Florida correlated birth defects to heavy pesticide spraying.

Diet may be the primary source of long-term, low-level human exposure to pesticides. Traces of pesticide residues have been found in crops, processed food, surface water, and groundwater in many parts of the US. One example, aldicarb, a suspected carcinogen used widely on oranges and potatoes, was found in groundwater in 11 of 15 states monitored. Alachlor, another suspected carcinogen used on about 30% of the corn and soybeans grown in the US, has been found in groundwater and streams, especially in the Midwest. On the market since 1969, its potential contamination of meat products and water is just now being considered. Some foods have been found to contain residues of more than one pesticide. Because many chemicals react synergistically, or become more toxic in combination, it is alarming that there is currently no testing for synergistic effects.

Occupational Exposure

Farmworkers, pesticide applicators, nursery workers, grain mill workers, tank loaders, and pesticide industry workers are all exposed to pesticides. In California, pesticides are the major single cause of occupational illness.

Workers involved with the manufacture of pesticides are theoretically protected by the Occupational Safety and Health Administration (OSHA). However, since 1980, the American Public Health Association and others have charged that OSHA's lack of factory inspections jeopardizes workers' health and that OSHA's standards for those working with chemicals like ethylene dibromide (EDB) and ethylene oxide are inadequate.

According to the US Department of Labor, farmworkers have the highest rate of toxic chemical injuries of any occupational group in the nation. They are not covered by OSHA, nor are they adequately protected by federal pesticide law. Employers are not required to tell workers what chemicals they are using, nor do the workers have a legal right-to-know what the pesticide label says. Until recently, most labels were printed only in English. As of January 1985 labels for

Photo: Maggie Kraus

Hazardous pesticides require use of the kind of protective clothing worn here, especially when the applicator is exposed routinely or in a closed area.

the most toxic pesticides must state in Spanish that the product not be used without thorough explanation. However, the applicator may never see these instructions; and they do not appear on products manufactured before 1985.

Records of occupational exposure to pesticides are inadequate. Many doctors, lacking diagnostic training in this area, do not recognize pesticide poisoning symptoms and, consequently, cases go unreported. A Pesticide Incident Monitoring System was formerly used to track pesticide poisonings in farmworkers, but has been discontinued. Over 60,000 incidents were reported to EPA during the program's ten years of operation.

Agricultural Pesticides

Agricultural pesticides have brought about extensive changes in US farming and now account for 75% of all pesticides used in this country. The expansion of the agricultural export market has encouraged the development of large mechanized farms which grow a few specialized crops, such as corn or soybeans, in enormous quantities. By planting single crops, or monocultures, farmers have abandoned many of the techniques which controlled pests and maintained healthy soil, such as crop rotation, crop diversity, and use of cover crops.

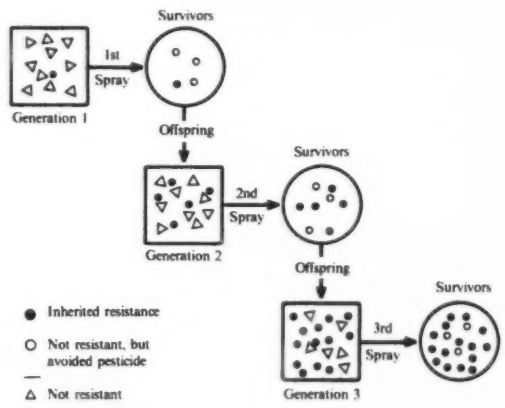
Efficiency in agriculture has come to mean profit, without regard for inputs of land and soil, energy, machinery, chemicals and capital . . .

Nancy Matheson
Western Governors' Association, Helena, Montana

Monocultures tend to encourage the proliferation of pests, necessitating applications of chemicals, which kill the beneficial predator insects that control pests. Without natural controls, farmers have been required to increase the rates and doses of chemical applications, which have in turn increased the rapidity with which pests have developed resistance to chemicals. The next step has been to use a new chemical—and the cycle begins again.

The impact of pest resistance is such that despite a tenfold increase in the use of chemical pesticides over the past 40 years, the percentage of crop losses has doubled. By 1980, 428 varieties of insects, ticks, and mites, 150 plant pathogens, and 50 weed species had become resistant to one or more pesticides, and the rate of resistance is growing. Manufacturers are having difficulty finding new chemicals which are not only easy to synthesize but which can meet health and safety standards. Research and development of a new chemical has been estimated as costing between $20 and $45 million, raising the price for consumers.

Evolution of Pesticide Resistance (modified from Flint and van den Bosch, 1977)



Source: *Integrated Pest Management*, Council on Environmental Quality.

In the first generation, only one insect—the green dot—has the genetic makeup to survive the pesticide. When that insect mates with insects susceptible to pesticides—the triangles—some resistant offspring are produced along with susceptible ones. By the third generation, the resistant insects are in the overwhelming majority.

Alternatives

As the costs of farming have risen and the adverse effects of chemical pesticides have become more obvious, an increasing number of farmers are now looking for ways to reduce their dependence on them. The most promising solutions lie in farming methods which involve natural checks and balances.

Integrated Pest Management (IPM)

The goal of IPM is to control pests through tactics which minimize hazards to health and the environment while protecting crops. This kind of pest control requires an understanding of the interaction of soil, climate, plants, animals, insects, and microorganisms in the area where applied. Careful professional monitoring of pests, potential pests, and their natural enemies determines what strategy or mixture of strategies will be used and when it will be necessary to use them. An IPM program never relies entirely on chemical controls. The major strategies are:

Biological controls which involve

- natural enemies, such as parasites and predators usually introduced from other, sometimes foreign, locations—for example, a parasitic wasp from Iran now controls the walnut aphid, and the South American flea beetle is used successfully to control certain weeds;
- naturally-occurring local enemies which can be protected in order to multiply, or be commercially raised, such as the ladybug;
- pathogens (microscopic disease-causing agents) which have been effective in the control of caterpillars, beetles, grasshoppers, and even plant

Photo USDA

Natural enemies help control certain pest insects. Here a ladybug beetle devours a pea aphid.

diseases; for example, Bacillae thuringiensis (B.t.), the most widely known and commercially available pathogen, is effective in controlling the gypsy moth.

Cultural controls which include

- careful watering and fertilizing of crops;
- timing of planting and harvest to miss pest outbreaks;
- rotation and intermixing of crops;
- the destruction of pest breeding areas by mowing, plowing under stalks, removing diseased plants, and cleaning up animal wastes that are not being used as fertilizer.

Chemical controls which should be

- selective so that they will not injure natural enemies;
- carefully timed to be the most effective and to avoid stimulating resistance;
- carefully applied to hit the target species only.

Estimated Agricultural Benefits in California through Major Successful Biological Control Programs, 1928-73 (Huffaker et al., 1976)*

Pest	Crop	Degree of Success	Benefits (million dollars)
Black scale	Citrus	Partial to complete	59.7
Citrophilus mealybug	Citrus, deciduous fruits, and ornamentals	Complete	91.0
Grape leaf skeletonizer	Grape	Partial to complete	2.5
Klamath weed	Rangeland	Complete	66.2
Olive parlatoria scale	Olive	Complete	7.4
Spotted alfalfa aphid	Alfalfa	Substantial	47.6
Walnut aphid	Walnut	Substantial	1.0
Total			275.3†

*Copyright© 1976 Academic Press. Reprinted by permission
†Figures do not add because of rounding.
Source: *Integrated Pest Management*, Council on Environmental Quality.

Other methods of insect control involve sterilization of males to reduce insect populations and the use of synthetic mating odors to trap insects or to disrupt the mating cycle.

Development of disease- and pest-resistant plant strains has been successful for numerous crops such as apples, grapes, and wheat. With more research, control of pests through the use of such strains could play a more important role in agriculture.

Everywhere cotton is grown, the pests that plague it—over 25 species of beetles, caterpillars, bugs, and mites in 36 countries—have been resistant.

Michael Dover
Brian Croft

World Resources Institute

IPM was successfully used in growing alfalfa as long ago as 1943 and saved many Texas cotton growers from financial disaster when pest resistance became a serious problem in the 1970s. A 1979 Office of Technology Assessment report estimated that IPM could reduce reliance on chemical pesticides by 75% and harvest loss by 50%, while lowering overall pest control costs. Citrus red scale, for example, can be controlled by a natural enemy for $20 per acre as opposed to $200 by chemical means. Unfortunately, such methods have been neglected because initially chemical pesticides seemed an easy, efficient, and inexpensive remedy while IPM demanded more time and ingenuity. Lack of information and training in IPM has also hindered widespread use of the method.

At this time, there is a need for more basic research in all the strategies involved in IPM, and on farming ecology in general; for improved research and education programs in land grant universities; and for a national system to collect and disseminate information. In order to achieve all this, there must be coordination between the many agencies involved in pest control: EPA, the Departments of Agriculture, Interior, and Defense, and the National Science Foundation, as well as between the federal government, the states, and the land grant universities. Furthermore, federal support must be long-term

because of the time required for research, education of scientists and professors, and training of personnel.

Since such administrative changes evolve slowly, farmers can act now to form cooperative IPM programs to share data, monitoring, and proven methods of non-chemical pest control. One such cooperative, the Texas Pest Management Association, has cut back its use of pesticides from 20 million pounds in the 1960s to 2 million in the 1980s.

Biotechnology

Genetic alteration, or biotechnology, is stimulating increasing interest and concern. Biotechnology may play an important future role, but scientists caution that with limited current knowledge risk assessments are difficult to make and, once there has been high investment of capital, the technology may be hard to control. To date no federal regulations govern genetically altered organisms. Some entomologists question whether biotechnology will overshadow the safe and effective use of biological controls as DDT did 40 years ago.

Organic Farming

Another approach to pest control is organic or alternative farming. There are many similarities in the methods used by organic farmers and farmers using IPM. The organic farmer, however, attempts to avoid using chemicals entirely, relying on biological controls and farming strategies. Generally, organic farmers share the following goals: to produce healthy crops and livestock while protecting soil, water, and human health; and to lower costs by reducing inputs of energy and manufactured chemicals.

A 1980 study of organic farming was conducted by the US Department of Agriculture (USDA) in response to increasing numbers of requests for information and advice. Contrary to what some critics believe, organic farms are not limited by size, and most organic farmers are well-educated and experienced—80% had farmed for more than 8 years, 44% for 30 years or more. They also use sophisticated and modern techniques which take into account the farm as an ecosystem.

Convinced that healthy soil is of prime importance, organic farmers avoid monocultures and the use of chemical fertilizers and pesticides which kill beneficial earthworms, insects, and microorganisms. Animal and vegetable wastes are routinely returned to the soil because soil high in organic matter has numerous benefits: it produces healthier disease- and pest-resistant plants and fewer weeds, holds moisture better, and erodes less. Crop rotation, carefully timed tillage and planting, and all the cultural controls included in IPM are also part of organic farming. Biological controls are used when possible in growing vegetables and fruit.

Economic studies of organic farms indicate that actual farm costs are lower than those of traditional farmers. If the hidden costs to the latter of environmental degradation and family illness were considered, then the profits of organic farming would be considerably higher.

Photo: USDA

Strip cropping, one of the techniques used in organic farming, reduces soil erosion and helps discourage pest populations which build up in monocultures.

Organic farmers now face many obstacles. Low cash value for some rotation crops and limited markets for organic food reduce income. Cosmetic standards determining the appearance of fruits and vegetables set by the Food and Drug Administration, influenced by commercial growers, and expected by the public make it more difficult to grow these products without chemicals.

Converting to organic farming usually requires a three- to five-year transition period during which yields are apt to be lower. There is presently not enough information from USDA or its Extension Services for farmers wanting to make the transition. The same kind of long-term research needed for development of IPM is necessary to determine ecologically sound farming strategies. One step in this direction is the Agricultural Productivity Act of 1985 which calls for pilot research programs in systems designed to cut production costs and reduce soil erosion and soil and water contamination. Education projects for farmers would be included in the plan. This five-year project, a small but important beginning, needs public support.

Pesticides in Forests

The extensive use of pesticides in forests to control unwanted vegetation and insect populations is a result of the dominance of timber production in forest programs. Federal law requires that equal consideration be given to recreation, watersheds, wildlife, and timber production in forest planning, but forest management as practiced by the Forest Service, the Bureau of Land Management, and private industry emphasizes the growth and harvesting of crop trees. As a result, routine preventive spraying and pest eradication programs are common. The widespread adoption of these practices reflects the strong influence of the Forest Service on state, local, and private forest management not only by its example as manager of more than 150 national forests, but through federal cost-sharing plans and research programs.

Clearcutting has a major role in current timber production. Sections of forests are totally leveled, replanted with one species of commercial timber, then sprayed with herbicides to eliminate vegetation which has been thought to interfere with the growth of valuable softwood. These practices result in soil erosion, nutrient depletion, destruction of wildlife habitat and loss of recreational potential.

There does not appear to be a valid economic case for extensive herbicide use in forest management ... the true costs of herbicide use are many times higher than the published figures and the benefits are a fraction of those claimed.

Jan Newton, "An Economic Analysis of Herbicide Use for Intensive Forest Management"

Routine spraying of rights-of-way, logging roads, and highways, as well as forests, is a common practice of states, local agencies, and private companies. This type of treatment contributes to pest resistance and environmental degradation and shows a disregard for safe alternatives. In the past some national forest areas and rangelands have been sprayed aerially, on a pre-scheduled basis, several times a year. Herbicides such as 2,4,5-T have been used to control unwanted

Photo: USDA

Spray drift annually damages or destroys ten percent of the nation's bees. Bees are essential for pollinating flowers, deciduous fruit, vegetables, legumes, and other crops that make up more than a third of our diet.

Photo: U.S. Forest Service

Helicopter sprays clearcut forest areas.

vegetation. 2,4,5-T contains dioxin, a highly toxic substance, which persists in the soil, enters groundwater, and accumulates in the food chain. Beef fat from cows grazed on these rangelands has been found to contain traces of dioxin. Although production of 2,4,5-T has ceased and the US government has suspended its use on foodstuffs, and in homes, recreational and aquatic areas, remaining supplies are still permitted to be used on rice and rangeland, even that which is adjacent to farmhouses, towns, schools, parks, and highways.

The questionable effectiveness of routine spraying and its adverse health effects on human beings and animals is now being examined. It has been estimated that only 1% of aerial spraying actually hits the target pest and only 25-50% reaches the target area. Instances of domestic and wild animal sickness and death in the areas of spray drift have been widely reported. Strong evidence of serious effects on human health in the Northwest and in Arizona from 2,4,5-T and other herbicides in the late 1970s resulted in a halt of aerial spraying by the Forest Service in 1984.

Pest eradication programs which attempt to eliminate entirely rather than control pests are usually unnecessary and almost never successful. Because methods for early detection of pest outbreaks are not being used, crisis situations can develop and extensive spraying programs result. In such cases, beneficial insects are also eradicated.

In the early 1970s, after DDT had been banned, a controversy arose over the control of the tussock moth in large areas of the Pacific Northwest. This moth attacks commercially valuable Douglas firs. Using a provision in the law which allows the use of DDT in the case of threats to public health or economic disaster, proponents of eradication—the timber industry, the chemical industry, and USDA—used political pressure to push its use in this instance despite lack of data on its effectiveness against the tussock moth and despite the fact that outbreaks usually decline within two or three years. While alternatives such as the bacteriological agent B.t. were available and many experts felt that the threat had been greatly exaggerated, the eradication advocates prevailed. As a result, over 400,000 acres of forest were sprayed at a cost to taxpayers of over $3 million. Wildlife was decimated, large numbers of cattle and sheep were contaminated, and a precedent set for future "emergency" use of DDT on forests.

Alternatives

Forests are uniquely suited to IPM because their long life permits continuity of monitoring and evaluation. In the past, two major forest IPM projects were funded by the federal government: the 1972 Huffaker project on the management of pests in pines, and the 1975 "USDA Combined Forest Pest and Development Program" for the control of the gypsy moth, the tussock moth, and the southern pine beetle. A five-year IPM pilot program begun in 1984 in Maryland for the control of the gypsy moth is being funded and directed by USDA and the Maryland Department of Agriculture.

The Forest Service is currently directing much of its research in this area to the development of improved seed and disease-resistant trees. It is working with state agencies and private companies to produce the most appropriate pest-resistant trees for each geographical region.

Beside these few programs, however, IPM for forests has low priority at present. More research and education is necessary. There is inadequate funding and little coordination between the agencies involved, and the pesticide industry's influence remains strong.

Changes in forest management practices such as the cessation of routine spraying and the adoption of IPM techniques could result in significant reductions in pesticide use. Perhaps even more important would be a fundamental review of all forest management practices. Studies have shown, for example, that "competing" vegetation does not necessarily slow the growth of crop trees. The forest in its natural state is a self-regulating ecosystem where natural enemies help control pest populations. Sometimes the best thing to do about forest management is nothing at all.

The public can influence change in forest management. The Forest Service is required to establish multiple-use goals for forests every five years. 1985 is one of those years. These goals provide the best opportunity for citizen involvement in management planning for local areas. Individuals, through public hearings, may either respond to government proposals or initiate their own. They must, however, have participated in this planning process if they wish to appeal any decision.

Pesticides in Cities and Towns

The use of pesticides in cities is potentially as serious a threat to health as in rural areas because the population is concentrated, exposure is often involuntary, and, on a per-acre basis, applications may be heavier than those used in agriculture. Of the total amount used in urban areas, most is for property protection, nuisance pest control, and aesthetic reasons; approximately 15% is for protection of public health.

Mosquitoes can be both a nuisance and a serious health problem. While yellow fever, malaria, and dengue fever have been eliminated in the United States, chemical control has not come without a price. Health problems have often followed aerial spraying; pest resistance has grown. According to the World Resources Institute, 51 of the 60 malaria-carrying mosquito species are now immune to DDT, lindane, and dieldrin—pesticides which in the past have been effective—and malaria is on the rise again in many countries.

Even if you use an atom bomb, you may kill everything else, but you may not kill mosquitoes, because they are so good at surviving—much better than we are.

Dr. Khian Liem, Director of the South Cook County Mosquito Abatement District

---

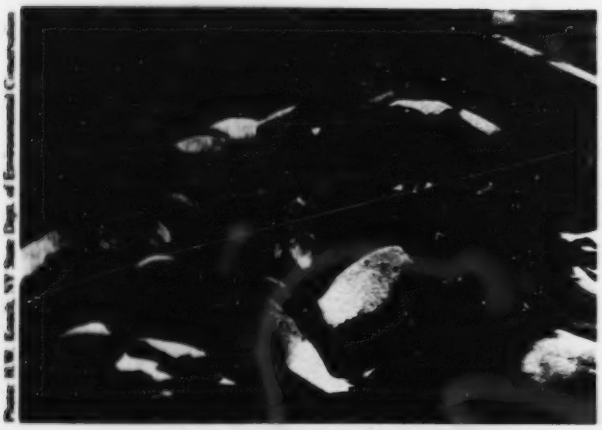
Safer and more lasting non-chemical alternatives to vast eradication programs have proven effective. One technique is to use a non-toxic bacteriological agent like B.t. against mosquito larvae which, unlike adult mosquitoes, are immobile and concentrated. Such a program, begun in 1977 in S. Cook County, Illinois, has been successful. The elimination of breeding areas, often stagnant pools in neighborhood backyards, is a key element in any mosquito control program. In Marin County, California, an integrated program using mosquito population monitoring and drainage has cut spraying by 90% and achieved a dramatic reduction in mosquitoes.

Rats must be controlled not only to prevent disease, but to protect property. Many rats and mice have become resistant to standard anti-coagulant

poison. New combinations of chemicals and new compounds such as a vitamin D compound overdose are now being tried. Sanitation, trapping, and modification of habitat are more effective means of control. Some types of **cockroaches** have also shown resistance to chemicals. As an example of alternative control, a small company is successfully implementing an IPM program in Boston for all indoor pests in hospitals and industrial sites. The methods used include searching out and trapping the pest and using boric acid powder for cockroaches in addition to careful monitoring and record-keeping.

In the past, **termites** have been controlled through the underground application of chlordane. An extremely toxic chemical, chlordane contaminates the soil for years. In the 1970s serious health problems in military housing were attributed to airborne chlordane. Contamination occurred when heating and cooling ducts in poured concrete slabs cracked or were pierced accidentally by exterminators. Non-chemical methods such as the use of nematodes and hormones have been successful in some areas, but a great deal more research is needed.

By far the greatest pesticide use in urban areas is not for reasons of public health but for nuisance pests and beautification. Pesticides are sprayed on parks, schoolyards, trees, highways, golf courses, and rights-of-way; in stores, restaurants, hospitals, office buildings, and factories. In Florida's three largest cities 325 golf courses are treated 4 to 6 times a year. In 1984, Collier County, Florida, was sprayed aerially 119 times in 3 months for mosquito control—far more than necessary either for reasons of nuisance or health.



Some seven hundred Atlantic Brant geese died after ingesting the insecticide diazinon on recently treated grass on a Long Island golf course.

Social attitudes and aesthetics play major roles in garden and park pesticide use. A desire for the "perfect" lawn or garden usually leads homeowners to chemical controls. Similarly motivated, local pest control administrators of city parks, schools, and roads believe in the necessity of prescheduled "insurance" chemical applications. Trees and shrubs are often sprayed before any pest problem appears. Commercial lawn care is often conducted routinely. In Florida, for example, it is estimated that at least three-quarters of the 2.5 million homes are treated four to six times a year for insect control, and half the lawns are treated with herbicides. This work involves extremely toxic chemicals, yet in most states only one applicator per company need be certified, and the criteria for certification are often less than stringent.

Many successful urban IPM programs have been carried out to replace routine spraying. One such program was implemented in the 1970s in five California cities to manage pests attacking shade trees. Routine spraying was eliminated in favor of monitoring key pests before taking action. In Modesto, for example, over a three-year period the use of pesticides dropped 99%, while the total cost was reduced by 41%.

In 1981 the National Park Service undertook a three-year model IPM program to control a variety of pests in a 70,000-acre area in and around Washington, DC. When monitoring and selective treatment were adopted, pesticide use was cut by 73%. This method was proven to be cost effective. Less hazardous, more selective chemicals were chosen when pesticides were used. As emphasis was placed on prevention, a new way of looking at urban pest management evolved within the Park Service. This process is constantly being updated and improved.

A 1984 report by the BioIntegral Resource Center suggests that integrated management techniques are being increasingly adopted in urban areas. IPM Coordinator positions have been created in several cities as well as in the National Park Service, and private companies offering IPM services have appeared in Washington, DC, New York, and in several cities in Texas and California. In addition, new products are available for use, such as less toxic, selective pesticides, bacteriological agents, and insect growth regulators.

The EDB Story

In the spring of 1983 a number of Florida's wells—supplying drinking water to some 10,000 people—were found to be contaminated by the potentially extremely harmful pesticide ethylene dibromide (EDB). In September a Washington television station reported that a private laboratory had found residues of EDB in bread, flour, wheat germ, cereal, milk, and meat. In the uproar following these discoverics the American public learned that ten years after EDB had been found to be of "unprecedented toxicity," and six years after residues of EDB were found on foodstuffs, the US government had taken no action to ban or restrict its use.

EDB was first registered in 1948 and has been widely used, primarily as a soil fumigant to protect crops against microscopic worms, but also as a fumigant for stored grain and grain-milling equipment, as well as for fruits and vegetables. In 1956 EDB was granted an exemption from FDA's tolerance requirements for residues on foods on the mistaken assumption that EDB residues would either dissipate or convert to a harmless substance.

In 1973 the National Cancer Institute advised EPA and the Agriculture Department that EDB produced cancer in experimental animals. (Even earlier—in 1965—reproductive damage in animals had been reported.) EPA responded in 1977 by initiating a Special Review process intended to speed up decisions on whether to ban or restrict its use. This review went on for six years during which time EPA granted several Emergency Exemptions to use EDB as a substitute for a similar soil fumigant, DBCP, which had been banned when it was found to cause sterility in industrial workers. In fact, in 1978, an Emergency Exemption was granted by one EPA office while another was calling EDB a "probable human carcinogen."

At the same time that EPA began its Special Review, FDA—more than four years after being told of EDB's unusual toxicity—began monitoring EDB residues in food. Yet despite the discovery in 1978 of EDB residues in fumigated wheat, no action was taken because EPA's 1956 tolerance exemption was still in place.

In the meantime, though the dangers of EDB were known, safe alternatives were not being sought. Finally, in 1983, soon after the public outcry over the discovery of EDB residues on food, EPA ordered an emergency suspension of EDB as a soil fumigant and, in February of 1984, emergency suspension of the use of EDB on grain.

Federal Legislation

Two laws regulate pesticides: the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), administered by the EPA; and the Federal Food, Drug and Cosmetic Act (FFDCA), administered by the Food and Drug Administration (FDA).

FIFRA

When passed in 1947, FIFRA was intended to protect farmers from dangerous and ineffective chemicals. At that time, only pesticides shipped in interstate commerce were registered and no testing for long-term health effects was required.

Amendments passed in 1972 required that all pesticides used in the US be registered for specific uses on the basis of testing, including long- and short-term toxicological data, to protect the public and the environment from "unreasonable adverse effects," and that all previously registered pesticides be reregistered with these same requirements.

In 1978 EPA was given authority to release to the public the health, safety, and environmental data submitted by manufacturers in support of registration, a law contested by manufacturers until finally upheld by the US Supreme Court in 1984 (Monsanto v. Ruckelshaus).

Amended many times since 1947, the current law is still not adequate to protect human health or the environment, and extensive reform is urgently needed.

Inadequacies in the Law

Reregistration

Reregistration of approximately 40,000 pesticide products and 600 active ingredients has been a very slow process because of the low level of funding and the number of personnel devoted to the task. By May 1984 only four active ingredients and 70 products had been reregistered. Public concern required EPA to increase its rate of review in the last year, but current estimates are that it will be another 20 years before reregistration is complete. Critics feel that this delay is excessive and unnecessary.

To further complicate matters, in order to comply with new testing requirements needed to show that a pesticide is unlikely to cause cancer, birth defects,

sterility or neurotoxicity, many companies hired a commercial laboratory, Industrial Bio-Test Laboratories (IBT), to conduct health tests. In 1978 it was discovered that much of this laboratory's testing was incomplete, invalid, or fraudulent: 212 pesticides, representing 15% of all registered chemical ingredients, had at least one invalid test done by this lab. Many of these pesticides, such as captan, paraquat, alachlor, acephate, and carbofuran, are in wide use. EPA recently ordered that the tests be redone, but most have not been completed, and no pesticide has been cancelled for lack of testing.

A March 1984 study by the National Academy of Sciences reported that sufficient data for complete assessment is available for only 10% of the pesticides now on the market; partial assessment is possible for 24%; minimal toxicity data exist for 36%. What this means for the public is that many of the pesticides now being used may be endangering health.

Special Review

EPA has been trying to focus on chemicals that appear to be health risks through a Special Review process. But since 1978 EPA has been required to supply validated test or exposure evidence to initiate the review. This places the burden on the Agency to prove that the chemical is unsafe, rather than on the registrant to prove that it is safe, and slows down an already lengthy process. Suspect chemicals remain in use while being reviewed, sometimes for many years, as in the case of EDB.

Some progress occurred in 1984 as a result of a successful lawsuit brought against EPA by the Natural Resources Defense Council, AFL-CIO, and a California farm worker, claiming that 13 suspect pesticides had been left on the market as a result of secret meetings and deals with chemical manufacturers. EPA has agreed to reinvestigate these pesticides and to open the review to the public, prohibit secret meetings, keep records of all meetings with industry officials, and comply with existing cancer risk guidelines.

Tolerance Levels

When a pesticide is registered for use on a food crop, EPA must determine the maximum amount of pesticide residue which is considered safe and can be allowed in food. The system for setting these amounts, or tolerance levels, is inadequate because it does not consider synergistic effects and is based on insufficient testing data and outdated or inaccurate estimates about the "average" US diet. For example, it is assumed that annually an individual eats no more than 12.5 ounces of spinach or 7.5 ounces of such common foods as summer squash, eggplant, avocado, mushrooms, blueberries, or tangerines. That EPA sets tolerances for pesticides suspected of causing cancer is further cause for concern. A new Tolerance Assessment System designed to correct some of these problems is being developed but may not receive sufficient funding to become operable.

Labels

The label is the result of the registration process and is the primary source of information for the consumer about the hazards and the use of the product. It is supposed to state the ingredients, warnings, and complete instructions for application, first aid, storage, and disposal. However, products manufactured before the mid-seventies were not required to have all this information, and because many labels have not been updated they are missing critical instructions such as when it is safe for workers to re-enter recently sprayed fields, as well as disposal information important for protecting groundwater. When these problems will be rectified is unclear since EPA has extended deadlines for updating labels.

Applicators

Although current law requires applicators of extremely toxic, or "restricted use" pesticides to be certified, it allows non-certified people to apply pesticides "under the supervision" of a certified applicator who need not be present. This permits the application of pesticides by people with little training or knowledge of the chemicals they are using, and with virtually no supervision.

Special Registrations

There are three kinds of limited registrations: Experimental-Use Permits, Emergency Exemptions (EE), and Special Local Needs (SLN). The last two have been widely abused, particularly by chemical companies wanting to expand the use of a product or

to avoid the delays of full registration. States can approve these registrations, but EPA is required to review them.

Emergency Exemptions are intended to allow temporary use of a pesticide which has not been registered for that particular use in order to deal with a pest outbreak which would otherwise threaten health or cause economic hardship, but only if another pesticide or alternative method of control is not available. These regulations have been violated by a number of Emergency Exemption registrations. Also, rather than being restricted to short periods, Emergency Exemptions have been granted renewal for as long as five years. In response to public pressure, EPA has recently formulated new regulations which require careful review of a chemical's data base and of possible alternatives before an Emergency Exemption is granted.

The most common and widely abused limited registration is **Special Local Need**, defined as "an existing or imminent pest problem within a state" for which state authorities have "determined that an appropriate federally registered product is not sufficiently available." States can approve registration for new uses of previously registered pesticides or for unregistered products which contain registered ingredients. In fact, SLN registrations have been approved for needs which were neither special nor local, but issued for major crops over wide geographic areas: 61 of the SLN pesticides were registered in five or more states, 33 in ten or more. The number of SLN registrations increased from 440 in 1976 to 1,656 in 1982. One of these registrations, Temik, now a known groundwater contaminant, was approved for SLNs in 14 different states in 1981 and 1982.

FIFRA Reforms

Reauthorization of FIFRA, scheduled for 1984, was postponed until 1985. A coalition of over 30 environmental, consumer, church, and health organizations has been formed to rewrite a reform bill. Members of the coalition have proposed that the following points be included in new legislation:

- establishment of a federal right-to-know law to give the public information on the identities, amounts, and health effects of pesticides being manufactured locally, as well as information on the location of plants and the emergency plans for evacuation;
- deadlines for completion of health and safety tests for all pesticides on the market—EPA should have the necessary tests performed at the registrant's expense if delays occur;
- an EPA health program for pesticide workers, staffed with health professionals;
- simplification of EPA's registration cancellation proceedings to give the Agency more freedom to focus on suspect chemicals in public hearings—citizens must be given the right to initiate and participate in such hearings;
- protection of groundwater from pesticide contamination;
- establishment of a private right-of-action, or citizen suit, so that an individual may sue in response to a pesticide misuse violation.

Risk/Benefit Analysis

EPA's decisions about the regulation of pesticides are made by weighing the economic and social benefits of use of each pesticide against the risk of environmental degradation and human illness.

Assessing risk includes experimental tests on animals and epidemiological studies, both of which have serious drawbacks. The use of epidemiological studies is hampered by the difficulty of measuring exposure or gathering enough cases to draw conclusions, the frequently encountered long delay between exposure and onset of disease, and the fact that no such studies are available for new products. The use of experimental animals is equally problematic, plagued with questions concerning the type of animal to use, the dosage, the route and frequency of exposure, and the length of the study. Paramount among these is the difficulty of extrapolating animal test data to human beings. In addition, almost nothing is known about the effects of exposure to a number of pesticides in combination.

In light of these difficulties and unknowns, many people feel that in the past—as in the case of EDB—commercial benefits have taken precedence over human health in the regulatory process.

FFDCA

Under this Act the Food and Drug Administration (FDA) is directed to enforce the tolerance levels set by EPA, to seize or condemn foods containing residues which exceed those levels, and to invoke criminal penalties when necessary. FDA uses two methods to monitor food (except for meat and poultry which are inspected by USDA): general inspection of approximately 10,000 samples from shipments per year, and the annual "market basket survey" intended to assess the total intake of pesticides in the US diet.

Inadequacies in the Law

The monitoring program has numerous weaknesses, compounded by lack of funding, so that it does not function well enough to ensure consumer protection. As noted above, tolerance levels are usually based on flawed or invalid testing. Of the inspections that are made, 75% are for cosmetic standards only. To make matters worse, FDA laboratory techniques can presently detect less than one-third of all the pesticides being used on food.

Enforcement authority is split among FDA, EPA, and the states in a way that reduces the effectiveness of FDA. For example, FDA is responsible for monitoring interstate shipments, while the states are responsible for commerce within the state; but FDA does not have the authority to embargo shipments and must rely on the states. Since there are often delays between food collection and food testing, suspect food may be sold and consumed before action can be taken. When pressing charges, FDA is hampered by lack of authority and personnel. The end result is that there are very few seizures, injunctions, or criminal penalties.

A year-long 1984 study by the Natural Resources Defense Council which analyzed pesticide residues in ten different types of California produce describes the failings of state and federal programs for monitoring pesticide residues in food and points out the necessity for improved regulations.

Some major findings:

- almost half of the produce tested contained residues of nineteen different pesticides;
- the presence of banned pesticides, many of them suspected carcinogens, was alarmingly high;
- the pesticide most commonly found was DDT, demonstrating its persistence in the soil but also suggesting that it is being used illegally;
- 42% of the foods contained more than one pesticide, demonstrating the need to consider synergistic effects when setting tolerances.

Amendments to FFDCA

Legislation proposed in 1984 to amend FFDCA will be reintroduced in 1985. Key points of the 1984 bill sought to

- repeal or amend unsafe tolerances or exemptions;
- obtain missing health and safety data within a specific time schedule, and set specific standards for testing;

Reprinted with permission. All rights reserved.

- study the synergistic effects of chemicals in food;
- provide public access to health and safety studies before a tolerance level is set;
- tighten standards for exemptions from residue limits;
- review current exemptions within 180 days of enactment;
- provide for added FDA authority in controlling imported produce. (On a yearly average 25% of fresh fruit and vegetables comes from outside the US. Pesticides which have restricted uses or zero allowable residue in the US are frequently used in other countries, with the result that imported food may expose consumers to high levels of unsafe chemicals).

Other suggestions by environmental groups studying the problem have been to create a new food grade which would indicate the absence of pesticides; to prohibit exemptions and tolerances which allow pesticide use for purely cosmetic reasons; and to limit insect contamination seizures to those detrimental to health.

The FIFRA reform legislation and amendments to FFDCA will be reintroduced in 1985. Citizen interest and support will be very important if this legislation is to pass.

State Legislation

Many states have their own legislation regulating pesticides which, according to FIFRA, may be more stringent than federal laws but cannot be less so.

Most states base their registration of pesticides on federal registration since they usually do not have the resources needed for thorough evaluation. As noted before, states have the authority to approve registrations for Special Local Need and Emergency Exemptions.

In 1978 responsibility for primary enforcement of FIFRA was transferred from EPA to the states where in most cases state agriculture departments assume authority for pesticide regulations. This creates a conflict of interest since the focus of the department of agriculture is generally to promote crop production rather than to protect public and environmental health. Even when such conflicts do not occur, states are hampered by lack of staff to make inspections and respond to complaints and by the inability to assess adequate penalties and fines. Cases may be referred to EPA, also currently too understaffed to handle them. A 1981 General Accounting Office report concluded that EPA and state officials were not taking sufficient action to deter future violations of the law.

States have the opportunity to close the loopholes in FIFRA and to deal with specific state problems by more careful regulation of pesticides. As a result of the pressure from citizens' groups and the action of state officials, Texas, California, and Rhode Island have insituted new and improved regulations.

Texas

In 1984 Commissioner of Agriculture Jim Hightower, responding to growing public concern about pesticide use in Texas, named a task force to study state problems and evaluate the state's ability to regulate pesticides. The resulting report pinpointed numerous agency weaknesses and described steps for improvement. The report states that since many federal registrations are based on "grossly inadequate" information a major effort will be made to evaluate the pesticides most heavily used in the state and to deny or cancel registration when there is insufficient data. The state will give more attention to worker health and safety by giving priority to health violations, increasing the number of inspections, and designing education programs to inform workers of their rights and how to report violations. Having found the present system of penalties totally inadequate, the department will ask the legislature for more authority and an amended penalty structure.

Working with citizens' groups and non-profit organizations, the State Department of Agriculture instigated passage of new legislation in 1985:

- requiring farm owners to alert those neighbors who have requested notification of pesticide applications by signs in Spanish and English, and letters or phone calls;
- establishing new field re-entry standards for farm workers;
- requiring farm managers to give workers detailed information on pesticide use and dangers to compensate for inadequate labels.

California

Because California applies 25% of the agricultural pesticides used in the US, the state has more comprehensive pesticide legislation than other states. A registration unit is funded by an annual registration fee, a mill tax assessment on pesticide products, and the state general fund. In 1985 there were two legislative victories for citizens' groups. The new Birth Defects Prevention Act requires the state to examine pesticide registrations for missing health data, requires cancellation of registrations for which manufacturers do not supply missing information within certain time limits, and prohibits the future registration of pesticides for which health data are missing. Other legislation permits public access to health data.

Rhode Island

Organized in 1982, the Rhode Island Group Against Spraying Pesticides (GASP) has been successful in petitioning the Department of Environmental Management (DEM) to give up routine aerial spraying of Sevin for gypsy moth control in favor of B.t., to ban over-the-counter sales of chlordane, and to cut down on the use of malathion in mosquito abatement programs. (GASP will petition again in 1985 for a ban of malathion.)

After GASP learned that Temik was being found in wells at excessive levels, the group gathered information to petition DEM to stop use of the pesticide. As a result, Rhode Island became the first state to ban this chemical. At the same time, GASP requested that the Pesticide Advisory Board (required by law) which had not met since 1977, be reactivated and involved in pesticide regulation. An organizer of GASP is now a member of this Board.

In organizing the campaign to ban Temik, GASP found that an effective way to present their case was to arrange a public forum which included citizens, state officials, four candidates for the state legislature, public health experts, scientists from the University of Rhode Island, and media representatives. The event received state-wide media attention.

Working with other citizens and the governor of Rhode Island, GASP has drafted legislation, now before the state legislature, to raise pesticide registration fees which will provide aid to pesticide victims and fund research on IPM.

Community Action

Local Ordinances

In 1982, concerned about the indiscriminate use of pesticides on lawns and gardens, the Springfield Garden Club of Montgomery County, Maryland began to study the chemicals being used by lawn companies, the regulations pertaining to them (including state and federal laws for pesticide applicators), potential hazards, and alternative methods of control.

In June 1983 the Club submitted a unanimous resolution to the County Executive asking the county to address the problems they had documented. Later that year, members of the Ecology Committee of the Club and members of supporting environmental groups along with industry representatives were invited to participate in a Pesticide Management Working Group. This group drafted legislation to guarantee homeowners and their neighbors the "right-to-know" which pesticides are being used by lawn companies, the degree of their toxicity, and the effects on the environment.

While some lawn care companies opposed the suggested legislation, the Club publicized its proposals and kept them in the public eye through press releases and community meetings, maintaining detailed records of all activities.

In 1984 the coalition sought legal advice. They drafted a new ordinance based on the power granted to chartered counties by the Maryland Constitution to protect the health and safety of their citizens. It assumes no conflict with state and federal law since both Maryland law and FIFRA address pesticide application and registration policies, **not** the dissemination of pesticide information.

If passed by the County Council this ordinance, which now has the support of the County Executive, would require lawn companies to provide the customer with the names of the pesticides to be applied and the potential health effects of those pesticides; to provide neighbors and chemically-sensitive people with notice of pesticide applications through the use of small signs posted on lawns; and to require that houses being treated are provided with a small decal to assure proper identification of the house to be sprayed.

Communities throughout the US, finding that neither federal nor state regulations are providing

adequate pesticide protection, are writing similar local ordinances to protect them from involuntary exposure to chemicals used by lawn care companies, timber companies, or local governments.

One of these was passed in Wauconda, Illinois, in 1984. Pest control and chemical companies have marshalled their considerable forces and have brought suit on the grounds that this ordinance is preempted by state and federal law; that the ordinance is unfair because it applies only to commercial operations; and that it discriminates against out-of-state lawn care companies.

An ordinance banning aerial spraying of phenoxy pesticides in Mendicino, California was upheld in the California Supreme Court. Although subsequently negated by a law passed by the California legislature forbidding the preemption of pesticide regulations by localities, the Court's action established an important legal precedent.

Local "right-to-know" ordinances appear to have more chance of survival if they involve only notification and avoid any attempt to regulate. For example, any proposal to register applicators can meet with charges that state or federal law is being pre-empted. In 1985 the chemical industry is launching a campaign to secure federal legislation which would preempt local ordinances.

A model "right-to-know" ordinance for localities has been drawn up by the Institute for Public Representation of the Georgetown University Law School in Washington, DC. Along with the ordinance, the Institute has prepared a memorandum outlining some of the legal issues which may confront groups attempting to develop such legislation. These documents are available to citizen groups.

Civil Action Suits

Citizen groups, aware that enforcement of FIFRA is inadequate at best, are turning to the courts for help in pesticide regulation. Cases have included product liability, damages and injuries due to exposure, non-compliance with state and federal law, and injunctions against dangerous practices.

In the Northwest a number of different groups used the courts to stop aerial spraying of the national forests by the Forest Service, at least temporarily. These efforts began in the 1970s when residents living near national forests became ill or suffered miscarriages shortly after the spraying of 2, 4-D and/or 2,4,5-T. When the enquiries and complaints to the Forest Service and local government brought no redress, the groups began to research the law and the pesticides being used around them. They kept records of the dates and locations of the sprayings, the number of acres sprayed, the pesticides applied, and the dates of illness or miscarriage. They organized, secured legal help, and publicized their efforts.

Eventually civil action suits based on the National Environmental Protection Act were brought against the Forest Service and the Bureau of Land Management. While the Departments of Interior and Agriculture have claimed that any pesticide registered by EPA can be presumed to be safe, the courts have held that the agencies must prepare environmental impact statements containing "worst case analyses" (WCA) of the chemicals' effects on the environment and human health before widespread spraying can continue.

The chemical industry and forest management are counting on new guidelines for WCAs to be published by the Council on Environmental Quality in Spring 1985 to moderate the court's requirements. In the meantime, the Forest Service and Bureau of Land Management have decided to withdraw their appeals and will write a WCA, perhaps by the end of summer 1985.

Pesticide Cases in the Northwest

1977 Citizens Against Toxic Sprays (CATS) v. Bergland

1982 Southern Oregon Citizens Against Toxic Sprays (SOCATS) v. Clark

1983 Merrell v. Block
Save Our ecoSystems v. Clark
Oregon Environmental Council v. Kunzman
SOCATS v. Clark

1984 Northwest Coalition Against Pesticides (NCAP) v. Block
SOS v. Clark
Merrell v. Block
Merrell v. Ruckelshaus

Action Guidelines

The public has an important role to play in determining whether or not pesticides are being adequately regulated and safely used in states and communities, and in bringing about the necessary changes. Since each state and community has different regulations, the following are general suggestions and questions. Some apply on both the state and local level.

Find out about your state pesticide legislation

- What key changes need to be made in the legislation to improve regulation and enforcement?
- What agency and offices are responsible for regulation and enforcement? Would your state be better served if pesticide regulation and enforcement were handled by a different agency? (Public Health, for example?)
- What office handles pesticide complaints?
- What complaints were filed in the past year? Ask to see the file on complaints. It will give you an idea of what pesticides are causing problems and provide names of people to add to your network.
- Have any civil or criminal penalties been given for violations of pesticide use? What are the available penalties in your state?
- Can the state prosecute misuse cases administratively without referring them to county prosecutors?
- What is the budget for pesticide enforcement?
- Is applicator certification adequate?
- Are there any provisions for notification of pesticide applications in rural areas?

Look into state registration

- How may pesticides are registered and how is this done?
- What is the registration fee? How is this revenue used? Is there a fund for victims of pesticide misuse?
- Is any attempt being made to discern which widely or heavily used pesticides have missing health data or are suspected of having chronic long-term health effects?
- Have there been many registrations for Special Local Need? Have any of these violated the law by being neither "special" nor "local"? In order to prevent future violations you will need to know about SLN registrations before they are issued. If this information is not available from the state, it often can be found in publications for applicators. (For more information write to Kansans for Safe Pest Control).

Build a coalition

- Involve other groups such as farmers, farmworkers, labor, churches, and consumers.
- Coordinate efforts on the state and local level.
- Present your concerns to state legislators and to your representatives in Congress.
- Keep records of all communications with state and local officials.

Gather information on IPM and other alternatives

Promote alternatives through workshops, seminars, and published materials. Include funding for research on alternatives and provisions that alternatives be used whenever possible when writing new legislation. When attempting to ban or restrict pesticide use, be sure to present alternate, preferably non-chemical, methods.

- Where are farmers and their families getting information on pest control? Consider ways of getting the best information to them.
- Is your state land grant university doing research on alternatives? How much research time and money is spent on alternatives compared to chemical control? Who is funding this research?
- Does the county extension service provide information on IPM? on organic farming?
- Is organically grown produce being sold at your market? If not, ask for it and support local organic farmers.

On the local level, to find out what pesticides are being used and where, make a survey and a map of your community

(The Northwest Coalition for Alternatives to Pesticides has written a manual on how to research and prepare a map.)

- Are pesticides being used on trees, lawns, parks, schoolyards, in hospitals, schools, stores, on busses, subways?
- Who sprays in your community? City, lawn company, power company, railroad?
- In rural areas is there aerial spraying of crops?
- Are drinking water supplies threatened by pesticide applications? Has your water been tested?
- Are pesticides being manufactured or stored in your area?

Find out who is responsible for pesticide regulation

- Is there a Pesticide Board? Are there representatives of environmental and labor groups as well as public health experts on it?
- Does any agency coordinate pesticide use? Is there a spray plan? Are any records kept of who sprays when, where, and how much?

Become familiar with local regulations

- Are there local ordinances requiring notice of pesticide applications? Are chemically-sensitive individuals given special notice?
- What are the land-use restrictions? Is development permitted adjacent to agricultural areas?
- Are there buffer zones around schools, playgrounds?
- Is there any provision for disposal of unused pesticides or empty containers in your area?

To publicize important issues, involve the media on the community, state, and if possible, national level

- Find out who the environmental or health reporter is. Make sure you can back up your story with detailed information. Present both sides of the issue so that the reporter will not feel that you are leaving out important information. Recommend other sources (experts, if possible).
- Write editorials which can be sent to more than one newspaper.
- Write letters to the editor.
- If you are holding a public meeting, prepare press releases and press packets including the necessary background information. Make it as easy as possible for reporters to write the story.

Is the public to be totally excluded from participating in balancing, say, the risks of cancer or birth defects against the profits of dandelion extermination, even to the extent of being denied knowledge of the pesticides used in public places and in their homes?

Samuel Epstein, MD
"National Pesticide Policy is Dangerous to Your Health"

Resources

The following national organizations are working on pesticide and related environmental issues:

*Environmental Action Foundation
1346 Connecticut Avenue, NW
Washington, DC 20036
(202) 833-1845

Environmental Policy Institute
218 D Street, SE
Washington, DC 20003
(202) 544-2600

*+National Coalition Against the Misuse of Pesticides (NCAMP)
530 7th Street, SE
Washington, DC 20003
(202) 543-5450

*Natural Resources Defense Council
25 Kearny Street
San Francisco, CA 94108
(415) 421-6561

*Rachel Carson Council, Inc.
8940 Jones Mill Road
Chevy Chase, MD 20815
(301) 652-1877

The following national organizations have regional representatives who may be active on pesticide issues in your area:

League of Women Voters
1730 M Street, NW
Washington, DC 20036
(202) 429-1965

National Audubon Society
645 Pennsylvania Avenue, SE
Washington, DC 20003
(202) 547-9009

Sierra Club
530 Bush Street
San Francisco, CA 94108
(415) 981-8634

State or regional organizations:

*Audubon Naturalist Society
8940 Jones Mill Road
Chevy Chase, MD 20815
(301) 652-9188

*California Agrarian Action Project (CAAP)
P.O. Box 464
Davis, CA 94617
(916) 756-8518

*Center for Rural Affairs
Box 405
Walthill, NE 68067
(402) 846-5428

Citizens FACTS
P.O. Box 1783
Naples, FL 33583
(813) 262-3618

*Delaware Valley Toxics Coalition
1315 Walnut Street
Suite 1632
Philadelphia, PA 19107
(215) 735-7200

Inland Regional Council
P.O. Box 8633
Moscow, ID 83843

Kansans for Safe Pest Control
639 Mississippi Street
Lawrence, KS 66044
(913) 842-3266

*Lake County Defenders
Box 108
Lake Zurich, IL 60047
(312) 438-8461

Madison Audubon Society
111 King Street
Madison, WI 53703
(608) 256-0565

Massachusetts Audubon Society
North Street
Norfolk, MA 02056
(617) 528-3140

New Jersey Coalition for Alternatives to Pesticides (NJCAP)
P.O. Box 627
Boonton, NJ 07005
(201) 334-7975

Newport County Wildlife Association
P.O. Box 189
Jasper, AR 72641
(501) 446-2211

*Northwest Coalition for Alternatives to Pesticides (NCAP)
P.O. Box 375
Eugene, OR 97440
(503) 344-5044

PEST
Pocomoonshine Lake
South Princeton, ME 04668
(207) 796-2301 ext. 255

Rhode Island Group Against the Spraying of Pesticides (GASP)
RR 1, Box 689
Exeter, RI 02822

*Texas Center for Rural Studies
P.O. Box 2618
Austin, TX 78768
(512) 474-0811

Western Washington Toxics Coalition
4512 University Way , NE
Seattle, WA 98105
(206) 632-1545

+NCAMP is the primary national organization working on pesticide issues. Most pesticide reform organizations are members of NCAMP and can be reached by contacting the coalition.
*These organizations have publications concerning pesticide and related issues.

The following organizations or individuals can provide information on specific topics:

Agriculture

David Pimentel, Ph.D.
Department of Entomology
Cornell University
Ithaca, NY 14853

Terry Gips
*International Alliance for Sustainable Agriculture
1701 University Avenue, SE
Minneapolis, MN ~~55144~~ 55414
(612) 331-1099

Garth Youngberg
*Institute for Alternative Agriculture
9200 Edmonston Road, #117
Greenbelt, MD 20770
(301) 441-8777

Nancy Bailey
*Rodale Research Center
RDD 1, Box 323
Kutztown, PA 19530
(215) 683-6383

Health

*Center for Science in the Public Interest
1501 16th Street, NW
Washington, DC 20036
(202) 332-9110

Public Citizen Health Research Group
2000 P Street, NW
Washington, DC 20036
(202) 872-0320

IPM

*Bio-Integral Resource Center
1307 Acton Street
Berkeley, CA 94706
(415) 524-2567

Legal Assistance

California Rural Legal Assistance
1900 K Street, Suite 203
Sacramento, CA 25814
(916) 446-1416

Laurie Fowler
Legal Environmental Assistance Foundation (LEAF)
1102 Healey Building
57 Forsyth Street, NW
Atlanta, GA 30303
(404) 688-3299

Steve Meili (Local Ordinances)
Institute for Public Representation
Georgetown University
25 E Street, NW
Washington, DC 20001
(202) 624-8390

Legislation

David Baker
League of Women Voters
1730 M Street, NW
Washington, DC 20036
(202) 429-1965

Nancy Drabble
Public Citizen's Congress Watch
215 Pennsylvania Avenue, SE
Washington, DC 20003
(202) 546-4996

Workers

Jordan Barab
American Federation of State, County, and Municipal Employees (AFSCME)
1625 L Street, NW
Washington, DC 20036
(202) 452-4800

Debbie Berkowitz
Food and Allied Services Trade
AFL-CIO
815 16th Street, NW
Suite 408
Washington, DC 20006
(202) 737-7200

*Migrant Legal Action Program
2001 S Street, NW
Washington, DC 20009
(202) 462-7744

Select Bibliography

Barnett, Paul. *Pesticides: A Guide for California Farm Worker Agencies*. Davis, CA: California Institute for Rural Studies, California Rural Legal Assistance Foundation, August 1983.

Berry, Wendell. "Sowing Disaster." *Washington Post Magazine*, April 15, 1984.

Bezdicek, D.F., chm. ed. comm. *Organic Farming: Current Technology and Its Role in Sustainable Agriculture*. Madison, WI: American Society of Agronomy, et. al., 1984.

Borrelli, Peter. "Reinventing Agriculture." *The Amicus Journal*. Spring, 1984.

Bottrell, Dale. *Integrated Pest Management*. Washington, DC: Council on Environmental Quality, 1979.

Brown, Charles C. "Learning About Toxicity in Humans from Studies on Animals." *ChemTech*, June 1983.

Dahlsten, Donald L. "Pesticides in an Era of Integrated Pest Management." *Environment*, December 1983.

Davidson, John A., and Michael Raupp. "The Maryland Gypsy Moth I.P.M. Pilot Project." Cooperative Extension Service *Entomology Leaflet*. University of Maryland, March 1984.

Davis, Earon S. and Valarie A. Wilk. *Toxic Chemicals: The Interface Between Law and Science*. Washington, DC: Farmworker Justice Fund, 1982.

California Department of Consumer Affairs. "Clean Your Room!: A Compendium on Indoor Pollution." *Consumer Affairs*, February 1982.

Doherty, Maura. "Using Pesticides Without a Plan: The Case of Portland, Oregon." *NCAP News*, Vol. 4, No. 2, Summer 1984.

Dover, Michael, and Brian Croft. *Getting Tough: Public Policy and the Management of Pesticide Resistance*. Washington, DC: World Resources Institute, November 1984.

Duffy, Michael. "Pesticide Use and Practices." Washington, DC: *USDA Bulletin Number 462*, 1982.

Durham, William. "Significance of Pesticide Residues to Human Health." *Journal of Dairy Science*, Vol. 54, No. 5, May 1971.

Environmental Action Foundation. "Occupational Health Fact Packet." Washington, DC: EAF, October 1983.

___ . "Pesticides Fact Packet." Washington, DC: EAF, November 1984.

Environmental Protection Agency. "Pesticide Industry Sales and Usage: 1983 Market Estimates." EPA, December 1983.

Epstein, Samuel S. *The Politics of Cancer*. Garden City, NY: Anchor Press/Doubleday, 1979.

Flint, M.L., and R. van den Bosch. *A Source Book on Integrated Pest Management*. Washington, DC: Department of Health, Education and Welfare, Office of Environmental Education, 1977.

Ginsberg, Robert. "CBE Interviews: Dr. Khian K. Liem, Director of the South Cook County Mosquito Abatement District." *CBE Environment Review*. Chicago: Citizens for a Better Environment, July/August 1982.

Goldstein, Jerome. *The Least is Best Pesticide Strategy: A Guide to Putting Pest Management into Action*. Emmaus, PA: The J.G. Press, 1978.

Graham, Frank Jr. *The Dragon Hunters*. New York: E.P. Dutton, Inc., 1984.

Hinkle, Maureen. "A Citizen's Action Guide to the Federal Insecticide, Fungicide and Rodenticide Act." National Audubon Society, nd.

Institute for Alternative Agriculture. *Alternative Agriculture News*. IAA, August 1984 - January 1985.

Lockeretz, William, Georgia Shearer, and Daniel H. Kohl. "Organic Farming in the Corn Belt." *Science*, Vol. 211, February 1981.

Morgan, Donald P. *Recognition and Management of Pesticide Poisonings*, Washington, DC: EPA, January 1982.

Moses, Marion. "Pesticides." *Maxcy-Rosenau Public Health and Preventive Medicine*, 11th ed. John M. Last, ed. New York: Appleton-Century-Crofts, 1980.

Mott, Lawrie with Martha Broad. *Pesticides in Food: What the Public Needs to Know*. San Francisco, CA: Natural Resources Defense Council, Inc., March 1984.

National Academy of Sciences. *Forest Pest Control*. Vol IV of *Pest Control: An Assessment of Present and Alternative Technologies*. Washington, DC: National Academy Press, 1975.

____. *Regulating Pesticides*. ISB N 0-309-02946. Washington, DC: NAP, 1980.

____. *Toxicity Testing: Strategies to Determine Needs and Priorities*. Washington DC: NAP, 1984

____. *Urban Pest Management*. Washington, DC: NAP, 1980.

National Coalition Against the Misuse of Pesticides. *Pesticides and You*. Washington, DC: NCAMP, June 1982 - October 1984.

National Park Service. *Integrated Pest Management*. NPS, National Capital Region, Year Three/Final Report, Nov. 1, 1981 - Oct. 31, 1982.

O'Brien, Mary H. *On the Trail of a Pesticide: A Guide to Learning About the Chemistry, Effects, and Testing of Pesticides*. Eugene, OR: Northwest Coalition for Alternatives to Pesticides, 1984.

Office of Technology Assessment. *Pest Management Strategies in Crop Protection. Vol. I—Summary*. Washington, D.C.: OTA, October 1979.

Olkowski, William, and Helga Olkowski, dirs. "Case History: Shade Tree IPM Program." John Muir Institute for Environmental Studies, Center for Integration of Applied Sciences, January 1980.

Olkowski, W., H. Olkowski, and Sheila Daar. "Urban Integrated Pest Management: An Idea Whose Time has Come." *NCAP News*, Vol. 4, No. 2, Summer, 1984.

Perkins, John H. *Insects, Experts, and the Insecticide Crisis: The Quest for New Pest Management Strategies*. New York: Plenum Press, 1982.

Pimentel, David, and John H. Perkins, eds. *Pest Control: Cultural and Environmental Aspects*. Boulder, CO: AAAS Selected Symposium, Westview Press, 1980.

Pitman, Sue. "A Landmark Ordinance in Wauconda, Illinois." *NCAP News*, Vol. 4, No. 2, Summer 1984.

USDA. *Report and Recommendations on Organic Farming*. Washington, DC: USDA, July 1980.

Ruckelshaus, William D. "Managing Risk in a Free Society." *Princeton Alumni Weekly*, March 7, 1984.

Rural America. "The Pesticide Debate." *Rural America*, March 1980.

Sheets, T.J., and David Pimentel, eds. *Pesticides: Their Contemporary Role in Agriculture, Health, and the Environment*. Clifton, NJ: The Humana Press, 1979.

Sierra Club, Wilderness Society, National Audubon Society, Natural Resources Defense Council. *Conservationists' Guide to National Forest Planning*. Washington, DC: 1981

Strange, Marty, ed. *It's Not All Sunshine and Fresh Air: Chronic Health Effects of Modern Farming Practices*. Walthill, NE: Center for Rural Affairs, April 1984.

Texas Department of Agriculture. *Pesticide Safety For Texas: A Report of the Texas Department of Agriculture*. Austin, TX: October, 1984.

Trost, Cathy. *Elements of Risk: The Chemical Industry and Its Threat to America*. New York: Times Books, 1984.

U.S. Congress. House. Committee on Energy and Commerce. Subcommittee on Health and Environment. *Hearings on the Pesticide Tolerance Emergency Authority Act* (HR 5495). Statement of Robert T. Matsui, CA., May 24, 1984.

U.S. Congress. House. Committee on Government Operations. *FDA's Monitoring of Pesticide Residues in the Nation's Food Supply: Lessons from the Ethylene Dibromide (EDB) Experience*. 98th Congress, 2d Session, 1984, H. Rept. 98-1165.

US Government Accounting Office. *Stronger Enforcement Needed Against Misuse of Pesticides*. Report to the Congress. GAO, CED-82-5, October 15, 1981.

van den Bosch, Robert. *The Pesticide Conspiracy*. Garden City, NY: Doubleday and Co., Inc., 1978.

Van Strum, Carol. *A Bitter Fog: Herbicides and Human Rights*. San Francisco: Sierra Club Books, 1983.

Walker, J.T. "A Need for Urban IPM." *Journal of Arboriculture*. Illinois Society of Arboriculture, August 8, 1981.

Whiteside, Thomas. *The Pendulum and the Toxic Cloud*. New Haven: Yale University Press, 1979.